





# H I N T S

FOR THE

## *IMPROVEMENT OF TRUSSES;*

INTENDED TO

RENDER THEIR USE LESS INCONVENIENT,

AND TO

PREVENT THE NECESSITY OF AN UNDERSTRAP.

WITH THE

DESCRIPTION OF A TRUSS

OF

*EASY CONSTRUCTION AND SLIGHT EXPENCE,*

FOR THE USE OF

LABOURING POOR,

TO WHOM THIS LITTLE TRACT IS CHIEFLY ADDRESSED.

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BY

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HOXTON.

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## DESCRIPTION OF THE PLATE.



FIG. 1. Is the cherry-stone shooter of children. *a*, is a piece of string, secured to the two ends of a piece of bone, or of a bent cane, *b*, into which is inserted the stick *c*, which on being brought from underneath and placed on the upper side of the bow, returns back with velocity, on the removal of the pressure.

Fig. 2. Is a similar instrument, furnished with a pad, *b*, applied to the belt, *a*.

Fig. 3. Represents a pad, *a*; the back of which is of steel, so thin at the neck, near *c*, as to derive therefrom a degree of elasticity. *b* is the elongated termination of the pad, which plays in a hinge at *c*; the end of which being raised by the action of the spring at *e*, is thereby made to press forcibly on the part where the protrusion takes place.

Fig. 4. Shews the application of either of the fore-mentioned pieces of mechanism, to the circularly disposed spring of the common spring truss.

Fig.

Fig. 5. Represents, at the dotted line *a*, the line of direction in which the strap *b* acts, and its tendency, by being fastened at *e*, to drag the pad out of its proper situation to *c*. The dotted line *g*, pointing out the line of direction in which it will act if fastened at *f*, by which alteration the action of the spring is unimpaired; that part of the spring between *e* and *f* being entirely unrestrained.

At *h* is shewn the mode of applying either of the above contrivances for the relief of *umbilical herniæ*.

# PREFACE.

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SO much is it the practice to have recourse to patents, to secure to the proprietor the emoluments of any discovery, of real or pretended utility, in relieving the diseases to which the human frame is subject, that if no apology be necessary, yet some explanation may be proper, why it has not been had recourse to in the present instance. The circumstance which renders this explanation almost unavoidable is, that the public has been long in the habit of estimating the value of all such discoveries, by the profits which their proprietors derive from such exclusive patents. Why this practice has not been here adopted will be, perhaps, best shewn by stating the writer's sentiments respecting exclusive patents, in any case where the discovery respects the mitigation, or the removal of disease.

He considers then, that advertised nostrums, be their forms what they may, are divisible into those which may possess a considerable power over the animal system, or those which cannot possibly influence it in the least, excepting so far as they may affect the imagination.

With respect to the former of these, it cannot surely be difficult to obtain almost universal assent to the proposition, that such an indiscriminate application of a powerful medicine, as must take place with every advertised nostrum, must certainly sometimes, kill. Let its curative powers, in certain states of the body, be admitted to their utmost extent, its mischievous effects, in opposite states, must be admitted also just as far.

Grant that *James's Fever Powder*, as well as similar antimonial preparations of the shops, will effectually remove certain febrile diseases, if employed on the first days of their attack; when, perhaps, profuse discharges of every kind are demanded, and when every vessel is acting  
with



with preternatural force. But in the latter stages of these diseases, when the power of almost every vessel has been exhausted by the efforts of the disease, when debility has impaired the action of every organ, and when the thread of life, worn almost away, requires to break it but the smallest shock, should a nostrum of herculean powers be employed? In a word, at the moment when life depends on the employment of the most invigorative remedies, must not death inevitably result from the adoption of that which will rapidly reduce the little remaining strength of the patient. With the danger of similar misapplication must all powerful nostrums be employed; since the circumstances, under which they are delivered to the public, cannot but lead to their indiscriminate adoption.

With respect to those nostrums which do not really possess any power, except some transient influence on the imagination, the proprietor of them may say, that although they cannot remove, or even mitigate, disease, yet, on the other hand, it cannot be possible that they shall destroy; and that, therefore, he can do no harm by restricting their use by a patent: and as to the various arts employed to obtain their sale, he will say, that all he has to accuse himself of is, the adopting the common practice of those around him, in trying how far he can dip his hand in his neighbour's pocket. Whether this kind of defence will be admitted, when his own conscience is disposed to judge him; or whether, in the inferior courts, he might not, with his whole fraternity, be liable to punishment for obtaining money, under false pretences, is not the object of the present moment to determine; it will only now be attempted to ascertain, whether or not the public is not, in every such instance of deception, most seriously injured.

However strong may be the propensity to employ nostrums, the disinclination to take physic generally prevents all but such as are really ill from having recourse to them. But being really ill, a medicine of some efficacy is necessary, and if this be withheld, the disease is allowed to proceed, and, perhaps, to acquire a force which, afterwards,



no means may be sufficient successfully to oppose. Whatever therefore prevents the early employment of the necessary remedies, and thereby allows the accumulation of disease, must be highly detrimental, and must, in many cases, occasion the most fatal consequences. In this way, any nostrum, however innocent in itself, which prevents the adopting of proper means for the early opposing of disease, becomes as certainly destructive as if it had in itself possessed the most noxious properties. Under this description of course must be placed the whole tribe of things in various forms, which are said to act by certain mystic or talismanic powers, or, at least, by such powers as common sense does not acknowledge.

But it may be said, that the nostrum possesses uncommon efficacy, and can hardly ever be misemployed. Allow then that its qualities are so distinctly marked, that in no case whatever can it be misapplied; and that it possesses such specific and curative powers, that one of the most dreadful maladies with which mankind is afflicted is sure to yield to its powers whenever they are opposed to it. It may be asked if any objection can be made to such a nostrum? Undoubtedly, the objection to its existence as a nostrum must ever exist, in proportion to its excellency, and to its power of doing good. In proportion to the greatness of any blessing should be the exertions of every human being to promote its diffusion. He who opposes this principle from sordid selfish considerations, must be totally void of humanity, and not mindful that the moment may arrive, when the agonies he himself may suffer, may teach him grievously to lament his having sacrificed the ease and comfort, perhaps the lives, of many at the shrine of avarice.

Contrivances by which the conveniences, or the luxuries of life are increased, may, perhaps, be considered as fair articles of pecuniary speculation, and of individual exclusive advantage. But ought the necessities of life to undergo such a species of monopoly? Certainly not. Legislators have seen the baneful consequences, and have, therefore, enacted prohibitory laws, and have subjected those  
who

who infringe those laws to severe punishments. But certainly that man is much more deserving of reprobation, who, possessing a knowledge of the means by which a painful, and hitherto fatal, disease may be stopped in its career, unfeelingly beholds it spreading its devastation, far and wide; and instead of anxiously seeking to diffuse the blessed antidote, wherever the disease exists, limits it within the small range of a patent: and exerts himself, only to prevent its beneficial influence from extending to any one, who may not possess the power of purchasing it of him, at the price which he has affixed to it.

Possessing these sentiments respecting the reservation of exclusive property, in those discoveries which conduce to the preservation of life, and the diminution of disease, it was sufficient, to believe it possible, that the present little improvement might, eventually, prove beneficial, to produce such a publication of its description, as might prevent any one assuming the principle as their discovery, for the purpose of obtaining an exclusive patent. By stating this, however, it is not meant to arrogate the merit of a very important discovery; it is merely offered as a hint, which may probably suggest means of relief, easy of acquisition, in a disease in which, if these or similar means be omitted, a fatal termination may be expected to occur. A hope is also entertained that the principle, capable of being farther extended, may, under the attention of the ingenious mechanic, or even the patient himself, be so modified, as to be applied to the construction of an instrument, still more simple and more efficacious than any which have been, as yet, adopted.

# HINTS

FOR THE

## *IMPROVEMENT OF TRUSSES.*

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**A**MONG the numerous diseases to which the labourer is exposed, by the employment of those exertions which are necessary to procure him his daily bread, there is hardly one which more strongly calls for the aid of benevolence than the malady termed a Rupture.

Too commonly the unhappy sufferer, not sufficiently informed of the nature of his disease, or the cause to which it is attributable, perseveres, without the least caution or reserve, in the same labours to which he owes the calamity with which he is inflicted; and which must, almost hourly, occasion its increase. Nor unfrequently does it happen, that, aware of all the dreadful consequences, he finds himself subjected to the melancholy alternative of precipitating, by his industrious efforts, the termination of, perhaps, a fatal disease; or of being rendered a beggar, by the suspension of his usual labours.

A circumstance which renders his claim still more irresistible is, that when the nature of the  
disease

disease is ascertained, and even advice procured, the means by which his future ease and safety might be obtained are too frequently placed, by his poverty, beyond his reach.

These considerations led to the following attempt to devise such means of alleviation, as might be sufficient to prevent the increase of this shocking calamity, and which might, at the same time, be within the reach of every one. If the attempt has not entirely succeeded, it is hoped, that, at least, it has been so far successful, that it will place before the sufferer a mode of obtaining a temporary security from danger; and this too, by means far from difficult of attainment.

### RUPTURES.

BY a RUPTURE is here meant, according to the common acceptation of the term, the protrusion of any part of the contents of any cavity of the body, through an opening, either preternaturally formed or enlarged. But it is intended to confine the attention here to those which take place at the navel, or at the bottom of the belly, just above the groin, since these occur the most frequently of any.

The *first appearance of Ruptures* is, in general, marked by a very small swelling, which yields but little pain or inconvenience. Generally after a small time the swelling increases, and,



and, if not checked, becomes of so enormous a size, as not only to be dreadful in appearance, but productive of the most serious inconveniences and danger. It is, however, proper to remark, that sometimes, although but very trifling alteration may have taken place in the size of the swelling, the most imminent danger may exist.

*The causes of Ruptures* are, in general, violent and sudden exertions, which by the unequal action they produce in the muscles of the belly, occasion the pushing out of a part of its contents, at the places already mentioned, which are those, at which the least resistance is yielded.

To *distinguish a Rupture*, requires seldom more than to apply the fingers firmly on the swelling, which will then give way; but in coughing, even gently, a part of the bowels will be felt strongly pushing against the hand.

The *consequence of neglecting a Rupture* must be rendered evident by a very little attention. Through the gut, which is the part generally forced out, the food, changed to excrement, is constantly passing; should therefore any girting or stricture take place, at the opening through which the gut passes out of the cavity of the belly, the passage of this matter must be prevented. That which should have been discharged as excrement being thus detained, the bowels necessarily become distended, and inflammation

flammation follows, marked by frequent hiccup, almost constant vomitings, and dreadful pain. It may be proper to remark, that, even at this period of imminent danger, life may be saved by an operation; but should the ill-grounded terror of the patient, or the misapplied tenderness of his friends, prevent its timely adoption, symptoms of mortification will soon announce a speedy termination in death.

The only hopes of obtaining *a cure*, or of *checking the progress of the disease*, must be founded on the adoption of means indicated by the violent forcing outwards; which, as has been just observed, is so readily discoverable, on placing the hand on the part, during the moment of coughing. Conviction must immediately be felt, that could the pressure of the fingers, or a pressure imitating their's, be constantly maintained, the gut must be prevented from being forced out; and an opportunity given for such a change to take place in the parts, as may prevent the gut from being again forced out.



*TRUSSES.*

To obtain this necessary degree of pressure, many ingenious instruments have been contrived; but which, unfortunately, have constantly possessed this one fault, of being beyond the reach of a poor man's purse. Shocking reflection! that the honest labourer should suffer under a calamity, produced, not by indulgence in indolence, nor by the gratification of vice; but by those meritorious exertions of industry, on which, perhaps, the very existence of civil society depends, should have to expect a death of inexpressible torture from the want of an instrument, the cost only of a few shillings.\*

After various experiments in search of some instrument which might answer the purpose as well as former Trusses; but which might be of considerably less expence, the following contrivance appeared to be preferable; since, from the simplicity of the proposed construction, hardly any one would find difficulty, in forming such a

\* That instances warranting the above reflection are not of rare occurrence will, I believe, be generally admitted. To mention, therefore, that there are charities which kindly supply the poor with these necessary instruments must be sufficient to procure contributions for their support. Such are the SOCIETY FOR THE RELIEF OF THE RUPTURED POOR; and the SAMARITAN SOCIETY, established as a Supplementary Charity to the LONDON HOSPITAL.

truss as might keep the parts safely in their situation, until one could be obtained from the hand of the professional artist.

It is well known, that if a piece of stick, placed between the coils of a piece of rope, fastened at each end to some solid body, be turned round a few times, immediately as the force is removed by which it was turned round, it returns to its former situation with considerable force. Children avail themselves of this power to supply themselves with a little toy, a species of spring gun, which they use for throwing cherry-stones and small pebbles to a moderate distance. The string, fig. 1. *a*, is fastened for this purpose to the two ends of a bent bone, or piece of cane *b*, and a piece of stick *c*, inserted in the middle of the string, is turned round a few times, until, by having sufficiently twisted the string, it re-acts with considerable force. If then the end of the stick is drawn out so far that, when urged by the elastic action of the coiled string it shall press against the one side of the cane, it will directly return back to its former situation, on the removal of any pressure by which it had been forced round to the other side, and thus throw any substance placed on it to a certain distance. It is the application of this principle that is here wished to be recommended. This simple instrument, it is proposed, should be sewed on the outside of a belt,

belt, fig. 2. *a*, formed of girth web, first fitted with straps, or with buttons and button-holes, exactly to the shape of the belly. The stick, which may be cut to the shape marked at *b*, may be furnished on the side which is to apply to the belly, with a pad made with leather, filled with folds of flannel, or stuffed with bran. The stick being then brought from underneath into the position marked at *b*, fig. 2. it will there act with a degree of force equal to the tightness with which the cord has been twisted; and, if applied in this state, the protruded part being first reduced, it will, in general, be found competent to the retaining of it in its natural position.

To form the bow part of this instrument, various substances may be employed, but none succeed so well as cane or steel. Horn or whalebone have their elasticity too soon diminished by the heat and moisture of the body; admitting, by their increased softness, their ends to be brought nearer together, by which the cord becomes, in the same proportion, relaxed. If cane be employed, it may be scraped or cut away on the side which applies to the belly, as well as on the opposite side, that it may yield less inconvenience by projecting. But the preferable substance for this purpose is, undoubtedly, steel; a piece of which of about a quarter of an inch thick, and from two inches and a half



half to three inches in length, will form a bow sufficiently elastic, and which, at the same time, will be hardly at all projecting.

For the string, a piece of cat-gut is most usefully substituted; but it is best to employ a piece which, without being much worn, has been long stretched, as that will be less likely to yield, and lose its elasticity.

With respect to the belt or girth, its width should depend on the prominency of the belly; since, if this be considerable, the belt should be so wide, and so shaped, as to comprise the whole belly, like the lower part of a waistcoat. By this it will be prevented from slipping too low, and will be kept in its place without the necessity of an under-strap, which is exceedingly galling and inconvenient; but which with this kind of truss, will seldom be necessary. As, from the strong pressure of the pad, the other end of the stick is likely to raise the edge of the belt, it will be proper to sew, on the outside of the belt, over the bow, a piece of stiff leather, about nine inches in length, and from two to four inches wide, in proportion to the width of the belt. Thus with a most trifling expence, and with no more skill than is to be found in every village, nay, almost in every cottage, may a Truss be formed, equal to the effect of retaining the parts in their natural situation; and

and possessing the advantages of acting exactly in the required direction, and not requiring the troublesome appendage of an under-strap\*.

In every case of the first appearance of a small swelling just above or near the groin, the first point to be ascertained is, whether it be a Rupture or not. If it be found to be a Rupture, no time should be lost, nor expence spared, requisite for the obtaining a proper Truss from some skilful artist. It cannot be too strongly impressed on the mind, that a person in this state, unprovided with this species of security, is liable every moment to have the protruded piece of bowel so imprisoned by the sides of the opening through which it has passed, as to have the necessary passage of the excrement intirely shut up; or, should this melancholy event not speedily happen, the daily enlargement of the opening, and of the bulk of the tumour, from the addition of fresh protruded parts, may be expected almost to a degree of certainty.

Immediately, therefore, as the disease is ascertained to be a Rupture, a Truss should be procured; and if possible from an artist whose skill and practice in the formation of these in-

\* By turning under, and adapting itself to the curve of the belly, it possesses the advantages of *Mr. Lewis's* Trusses, the pad of which is enabled to be adapted to the prominency of the belly, by a very ingenious contrivance.

struments will be an assurance of its being equal to the effect intended to be produced. But should the unfortunate subject of the disease possess not the means of thus obtaining the aid of the most generally approved and adopted instrument of this kind, it is then recommended to him ; but then only, to avail himself of the simple instrument here described: always remembering, that he should consider it only as a temporary aid, and that any instrument that acts so imperfectly and irregularly, as ever to admit of the passage of the protruding part, is more likely to be productive of injury than benefit.\*

\* It should be strongly impressed on the mind, that no consideration should induce the sufferer to content himself with a Truss which does not constantly keep the part up. Should he find this to be the case with the Truss here recommended, the effect of an under-strap may be tried, which may be sewed on behind, about three or four inches distant from the back-bone, fastening the other end by a knob, or a double-tongued buckle, to the pad.

The author of *New Inventions and Directions for Ruptured Persons*, strongly urges the propriety of wearing a cushion, formed by slips of calico, underneath the pad. This mode first came under my notice several years ago, it being mentioned to me by an old gentleman who had employed it beneficially for some time, but had afterwards preferred a cushion formed of wash-leather, stuffed with bran, just full enough to admit the pad to embed itself in it. If it were only for its usefulness in protecting the tender parts in the neighbourhood of the pad, the truss should not be worn without this little addition.



*ON TRUSSES IN GENERAL.*

THE great defect observable in Trusses, in general, is their not applying themselves constantly to the part where the pressure is required. This defect obviously proceeds from the circumstance of the point of their required bearing falling considerably out of the horizontal line, which the greater part of the instrument forms, when affixed to the body. In consequence of this, the strap which is employed, in the simple Truss, to confine it in its situation, does really, by acting in an improper direction, tend so much to remove it from the situation in which it ought to be preserved, as to render it necessary to employ an additional power, (the under-strap) acting in a contrary direction, for the purpose of counteracting and regulating it.

What is here said will be more clearly understood by reference to fig. 5, of the annexed plate, where the dotted line at *a* marks the direction in which the strap *b* acts, and by which it tends to draw the pad into the position marked by the dotted lines at *c*, to counteract which tendency the under-strap *d*, is obliged to be employed.

Those

Those who are under the necessity of wearing Trusses, and are partial to that kind to which they have been long accustomed, will, I am confident, derive considerable advantage from a very slight alteration, consisting merely in a change in the position of the strap. The situation in which this is commonly disposed, and the inconvenience thence arising, has been already shewn in fig. 5, where the strap is secured by being hooked on a button at *e*. The alteration recommended is, that of merely removing the button to that part of the spring at *f*, where it begins to form the curvature necessary to bring the pad at its extremity almost to the groin. The strap being affixed to the button at this part, it is evident that instead of shifting the pad from its proper situation, it must, from its action being now in the direction of the line *g*, secure it in its situation. By acting in this direction, the following very important advantage is also obtained; the part immediately above the hip bone at *f*, becomes the fixed point, from which that part of the spring between *e* and *f*, where the pad is placed, has free power of acting; whereas if the strap is made to fasten immediately on the pad at the end of the spring, it not only drags it from its required position, but restrains the necessary action of the spring; the action of which from *f*, where it forms its bend to its termination

termination at *e*, should be quite free.\* So very considerable an improvement in the action of the Truss is produced by this trifling alteration, that hardly, in any case where it is adopted, will the troublesome appendage of an under-strap be at all necessary.

At fig. 3, is delineated another contrivance, rather more expensive, being more complicated in its structure; but which will, perhaps, fully compensate for this by the advantages it will yield. *a*, is the back of the pad, and which is best of steel, so thin as to be capable of yielding with some degree of elasticity at its narrowest part. At the upper part, this pad is connected with the plate *b* by the hinge *c*, beyond which it is extended a little thicker, and about half an inch in length, at *d*. Beneath this is a spring, which is secured at one end by a screw at *e*, whilst the other end acts by its elastic power on the projecting end of the back of the pad, and thereby occasions the required pressure on the part through which the protrusion takes place.

\* By thus deadening the action of the spring, one of the common spring Trusses appears to act with less efficacy than a Truss shewn me some years since, by the ingenious Mr. *Pepys*, in which, the only spring employed was contained in the pad, and acted in a direction perpendicular to the belly; being confined in its situation by a soft belt and an understrap.

This little apparatus may, like the former, be fastened on the outside of a proper belt, over which may be secured, as proposed in the former case, a piece of strong leather of proportionate thickness.

This contrivance, like the former, possesses this advantage, that whilst the strap, by not acting in an oblique direction, is most likely to preserve the instrument in its proper situation without an under-strap, the pad is, at the same time, allowed to act in that direction in which its pressure is most likely to prove effectual.

In *umbilical herniæ*, or *Ruptures at the navel*, both these apparatuses are applicable, as at fig. 5 *h*; and, indeed, appear to be preferable to any which are at present employed. They may also be adapted with considerable advantage to the circular spring of common elastic Trusses, as is shewn at fig. 4. By this junction of powers the following benefits are obtained; the pad, acted on by its proper spring, presses forcibly, at its lower part, against the belly, which pressure throws up, at its upper part, the circular spring, thereby detaching it somewhat from the belly, and lessening the probability of its occasioning any disposition to further protusion, by its partial pressure.

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